

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

FOR RELEASE: 6:30 A.M., E.D.T., JUNE 21, 1976

(202) 426-8787

ISSUED: June 21, 1976

Forwarded to:

Honorable Reagan Houston
Chairman
State Department of Highways
and Public Transportation
1914 Alamo National Building
San Antonio, Texas 78205

SAFETY RECOMMENDATION(S)
H-76-17 through H-76-18

At 4:20 p.m. on April 29, 1975, a Surtigas, S.A., tractor-tank-semitrailer westbound on U.S. Route 277 near Eagle Pass, Texas, swerved to avoid an automobile ahead which was slowing for a turn. The tank-semitrailer separated from the tractor, struck a concrete headwall, and ruptured; vaporized LPG was released. The ensuing fire and explosion destroyed a building and 51 vehicles. The 51 persons who were in the area were burned and 16 persons, including the truckdriver, were killed.

The National Transportation Safety Board determines that the probable cause of this accident was the evasive action taken by the truckdriver to avoid a slowing vehicle in his path of travel. The cause of the fatalities and injuries to persons in the vicinity was the explosive force and fire, from which they had no time to escape. The rapid development of the explosive force and fire was caused by the gross rupture of the tank.

The accident occurred between the intersection of U.S. Route 57 and a used car facility. According to witnesses, the truck was traveling at 50 to 55 mph in the 50-mph zone. The used car facility generates a large number of customers, all of whom must drive to the facility because of its isolated location. At the time of the accident, some 50 motor vehicles were parked on the shoulder and a few protruded onto the improved portion of the shoulder in front of the building. This generated a considerable amount of traffic conflicts, considering the rural location. These traffic conflicts could create a hazard for vehicles traveling at the posted speed limit. Federal Highway Program Standard No. 12, "Highway Design, Construction and Maintenance," recommends that "Whenever practical, it is desirable that a driver control recovery area, clear of obstructions for a distance of 30 feet or more from the edge of the traveled way, be provided in rural areas." In this case, there was a 30-foot-wide clear recovery area; however, it was occupied by parked motor vehicles. Highway hazards take a variety of forms, among which are those arising from conflicts between vehicles.

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The accident area should be reviewed to identify and initiate corrective action on the items which contributed to this accident. Possibly the speed limit should be reduced to accommodate a reduction in potential vehicle conflicts. If the truck had been traveling at a reduced speed, it might have been able to have stopped to avoid the hazard that caused him to swerve, or at least the evasive action might have produced lower forces, which the truck could have resisted.

The tank-semitrailer struck the concrete culvert headwall while it was turning over. The headwall was located 29 feet south of the roadway. It was 17.5 feet long, 12 inches thick, and 23 inches high. Until impact occurred, this accident had involved no injury. The tank's calculated velocity at impact with the headwall was 34 mph.

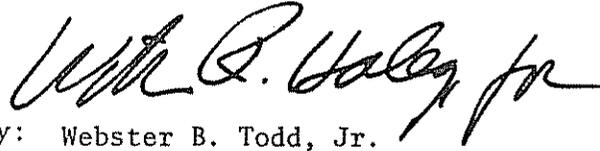
Both the American Association of State Highway and Transportation Official's (AASHTO) Standard Specifications for Highway Bridges and the Federal Highway Administration's (FHWA) Handbook of Highway Safety Design and Operating Practices call for culvert headwalls and endwalls to be flush with the ground so they will not be fixed objects. The FHWA Highway Safety Program Standard No. 12, "Highway Design, Construction and Maintenance," requires devices to protect vehicle occupants wherever fixed objects cannot be removed or designed to yield.

The Safety Board recognizes that U.S. Route 277 and the culvert were built before the above criteria were established. Also, it recognizes that this is the first accident in which a vehicle has run off the road and struck this headwall. If a standard barrier had been installed, it probably would have been penetrated by the tank-semitrailer. However, the barrier might have absorbed sufficient energy to reduce the impact forces with the headwall or redirected the tank so that it would not have ruptured.

Therefore, the National Transportation Safety Board recommends that the Texas State Department of Highways and Public Transportation:

1. Conduct an inventory of existing unprotected, raised concrete culvert endwalls and headwalls to establish a priority within their highway safety improvement program for their modification in accordance with Federal Highway Administration recommended practices. (H-76-17) (Class II, Priority Followup)
2. Conduct an engineering survey on U.S. Route 277 between the intersection with U.S. Route 57 and the city limits of Eagle Pass to determine if a prohibition of parking on the shoulder of this high-speed highway or a reduction in the speed limit, or both, would reduce the traffic conflicts in this area; then take appropriate actions in accordance with the survey's findings. (H-76-18) (Class II, Priority Followup)

TODD, Chairman, McADAMS, HOGUE, BURGESS, and HALEY, Members, concurred in the above recommendations.

A handwritten signature in black ink, appearing to read "Webster B. Todd, Jr.", written in a cursive style.

By: Webster B. Todd, Jr.
Chairman

THESE RECOMMENDATIONS WILL BE RELEASED TO THE PUBLIC ON THE ISSUE DATE SHOWN ABOVE. NO PUBLIC DISSEMINATION OF THIS DOCUMENT SHOULD BE MADE PRIOR TO THAT DATE.

